

FAMILY INFORMATION MANAGEMENT SYSTEMBACKGROUND OF THE INVENTION

## 1. Field of the Invention

The present invention relates generally to a computer assisted family information management system and, more particularly, to a family information management system able to process relevant family information from an information source with information stored in a family data file to create value-added family information which is accessible through a user interface system by all users of the system.

## 2. Description of the Prior Art

On any given day, each member of a typical family may have multiple appointments, tasks and/or errands to handle. While managing all the relevant information of a single individual for such activities may seem overwhelming at times, coordinating the information pertaining to all such activities of an active family (e.g., doctor appointments must be made and kept, meals must be prepared, grocery, clothes and incidental shopping are a necessity, homework must be completed, and children must be driven to a wide variety of practices, etc.) is no less than daunting. Moreover, it typically is difficult for one family member to get messages to other family members if he/she is running late or plans change.

The challenges associated with managing a family are well known. In order to assist in this endeavor, numerous calendars are kept to keep track of school and family activities, post-it notes and other reminders are plastered all over the refrigerator, and multiple "to-do" lists for shopping, errands, etc., are compiled throughout the house. Technological advances in cellular telephones and pagers have alleviated many communication problems, but the advent of answering machines and voice mail have their own inherent limitations. Computer calendars allow families to make a record of their schedules, but have limited accessibility. Thus, none of these technological advances present a computer assisted integrated system for managing the daily information and activities of a family in a manner which matches the actual way in which today's typical families live.

Therefore, a need exists for a family information management system which facilitates communication between family members and provides family members with relevant family information that can be enhanced by a number of information sources integrated therewith.

#### SUMMARY OF THE INVENTION

According to a first aspect of the present invention, a family information management system is disclosed as including a central control module containing at least one family data file, a user interface system for transferring information to and receiving information from the family data file of the central control module, and at least one information source connected to the central control module from which relevant family information is obtained. The relevant family information obtained from the information source is processed with information stored in the

family data file of the central control module to create value-added family information which is accessible in the central control module through the user interface system.

According to a second aspect of the present invention, a method of managing information within members of a family is disclosed as including the following steps: storing user  
5 information in at least one family data file contained within a central control module; obtaining relevant family information from at least one information source; processing the relevant family information with information in the family data file to create value-add family information; and, providing access to the relevant family information via a user interface system connected to the central control module. The relevant family information is obtained by the central control  
10 module retrieving or accessing it from an information source or the information source initiating and sending it to the central control module.

According to a third aspect of the present invention, a method of developing consumer understanding information is disclosed as including the following steps: providing a family information management system including a central control module with at least one family  
15 profile therein; obtaining the family profiles stored in the central control module; accessing the family information management system for the retrieval of family activity data stored in the central control module; and, analyzing the family activity data to develop consumer understanding information relative to the services and products provided to the services and products provided to the users of the family information management system.

20 According to a fourth aspect of the present invention, a method of enhancing a family information management system including a central control module with at least one family

profile stored therein is disclosed as including the following steps: obtaining each family profile stored in the central control module, accessing the family information management system for the retrieval of family activity data stored in the central control module, and analyzing the family activity data to improve the services and products provided to users of the family information management system. In addition, the method may also include the steps of surveying family members through the central control module and/or providing recommendations or suggestions to users of the family information management system based on an analysis of the family profile and the family activity data.

According to a fifth aspect of the present invention, a computer assisted integrated family information management system is disclosed as including a central control module including at least one family data file for storage of information relating to members of a family and a user interface system for transferring information to and receiving information from the family data file of the central control module where the user interface system operates in a voice mode from a remote location. The information entered into the central control module from the user interface system is converted from voice information to text information and information received by the user interface system from the central control module is converted from text information to voice information. The family information management system may further include at least one information source connected to the central control module from which relevant family information is obtained for storage in the family data file, wherein the relevant family information obtained from the information source is processed with information in the family data file to create value-added family information accessible via the central control module.

According to a sixth aspect of the present invention, a method of managing information within members of a family is disclosed as including the following steps: providing a central control module including at least one family data file for storage of information relating to members of a family; accessing the central control module via a user interface system operating in a voice mode; providing information verbally to central control module from a remote location; converting the verbal information into text information; and, enabling the family members to access the text information in the central control module. The method may further include the step of converting text information in the central control module to voice information for receipt by the user interface system.

#### BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed the same will be better understood from the following description taken in conjunction with the accompanying drawings in which:

Figure 1 is a schematic block diagram of the family information management system in accordance with the present invention;

Figure 2 is a schematic block diagram of the central control module depicted in Figure 1;

Figure 3 is a schematic block diagram of an exemplary family data file;

Figure 4 is a schematic block diagram of the CPU depicted in Figure 2, with a plurality of exemplary areas of functionality indicated therein;

Figure 5 is flow chart of the method of managing information within members of a family

in accordance with the present invention;

Figures 6-8 are schematic block diagrams of exemplary functions performed by the family information management system of the present invention;

Figure 9 is a flow chart of a method for developing consumer understanding information  
5 in conjunction with the present family information management system;

Figure 10 is a depiction of a screen display for a calendar application associated with the family information management system of the present invention;

Figure 11 is a depiction of a screen display for a to do list application associated with the family information management system of the present invention;

10 Figure 12 is a depiction of a screen display for a local information application associated with the family information management system of the present invention;

Figure 13 is a depiction of a screen display for a grocery list application associated with the family information management system of the present invention; and,

15 Figure 14 is a depiction of a screen display for a home application associated with the family information management system of the present invention.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The detailed embodiments of the present invention are disclosed herein. It should be understood, however, that the disclosed embodiments are merely exemplary of the invention,  
20 which may be embodied in various forms. Therefore, the details disclosed herein are not to be interpreted as limited, but merely as the basis for the claims and as a basis for teaching one

skilled in the art how to make and/or use the invention.

With reference to Figures 1-4, a computer assisted integrated family information management system 10 in accordance with the present invention is disclosed. Family management information system 10 includes a central control module 12 which stores and processes information pertaining to members of a family. At least one user interface system 14 is in communication with central control module 12 for transferring and/or receiving information therewith. Family information management system 10 also preferably includes at least one information source 30 from which relevant family information may be obtained and processed in central control module 12.

It will be understood that by "obtained," it is meant that relevant family information may be retrieved and stored by central control module 12, relevant family information may be accessed by central control module 12 (i.e., as in the case of a website, database, or the like) so that family information management system 10 need not provide additional memory and/or processing capability, or that relevant family information may be received from an information source 30 initiating the transfer of such information to central control module 12. Further, central control module 12 will obtain the relevant family information upon the occurrence of a request by a user of family information management system 10, a predetermined event recognized in central control module 12 and/or information source 30, a predetermined time interval, a predetermined time schedule, based on family activity data within the system, etc.

It will be seen in Figure 1 that information source 30 typically will be chosen from a group consisting of meal planning information 32, shopping information 34, school information

36, local information of interest 38, financial information 40, couponing information 42, although other types of information sources may also be utilized so as to provide relevant family information (i.e., information related to family activities, schedules and interests) which can be integrated with other information in central control module 12.

5           User interface system 14 preferably includes one of a variety of information input devices for inputting information in at least one family data file 44 contained in central control module 10 to preferably create a family profile (also known herein as user information). User interface system 14 will also preferably include an information access device enabling members of the family to access information in family data file 44 in a user friendly format. Accordingly, user  
10 interface system 14 is preferably chosen from a group of devices consisting of a home PC 16, a television 18, an in-home screen 20, a two-way radio 22, a cellular communication device 24, a pager 26, a scanner 27, or a telephone 28. As seen herein, central control module 12 further includes devices for accessing the plurality of information sources 30 to retrieve, access, or receive relevant family information, as well as for processing relevant family information  
15 obtained from information sources 30 with information stored in family data file 44 to create value-added family information. It will be appreciated that "value-added family information" is information developed from multiple sources (i.e., from family data file 44 and information source 30, from family data file 44 and user interface system 14, from information source 30 and user interface system 14, from multiple information sources 30, or from multiple user interface  
20 systems 14) such that the resulting information provides a benefit not provided by only a single source. Thereafter, the value-added family information is preferably formatted so that family



members may interface with central control module 12 for receipt of relevant, timely and synchronized value-added family information. Synchronized information ensures that all family members receive up-to-date information which has been coordinated with information input into central control module 12 by other family members.

5 For the sake of brevity, the term "family activities" will be used throughout the following description to refer to all the things going on in the daily life of a typical family. The term "family activities" is, therefore, intended to describe a wide variety of areas including, but not limited to, activities, schedules, interests, to do lists, etc.

While the term "family" is used throughout the body of the present disclosure, the present family information management system 10 is designed for use by any group of individuals wishing to integrate their daily lives in an efficient manner. For example, in addition to use by a nuclear family living together, family information management system 10 is designed for use by an extended family living at different locations, children away at college, and people living or working together or apart. In addition, family information management system 10 may be used by a single individual wishing to take advantage of the many functions and information sources 30 offered thereby. With this in mind, the term "family" is used in its broadest sense, and the scope of this patent should be construed accordingly.

In this way, family information management system 10 provides a computer assisted method for managing information within members of a family. More particularly, and with reference to Figure 5, family information management system 10 provides a computer assisted method for enabling family members to continuously maintain contact, while also receiving

helpful, and often necessary, information regarding a family's daily activities. In accordance with a preferred embodiment of the present invention, the method is achieved by first storing user information (also known as a family profile) in at least one family data file 44 contained within central control module 12 (see box 100). Information relevant to the family based upon specific  
5 criteria or user information established in family data file 44 is determined and obtained from the various information sources 30 (box 102), preferably processed with information in family data file 44 to create value-added family information (box 104), and access provided to the value-added family information by family members via user interface system 14 (box 106). The method is further achieved by receiving relevant family information from family members or  
10 relevant family information initiated by information sources 30 (box 108), processing the relevant family information (box 110), and/or forwarding the relevant family information to designated family members (box 112). Either of these types of relevant family information is also preferably processed with the information in family data file 44 to add value to the information available to the family members.

15 The specific criteria or user information established in the family profile preferably includes, but is not limited to, personal information regarding each family member 46, schedule information 48, telephone lists 50, financial information 52, lists (grocery 54, errands 56, daily to-do 58), planned meals 60, family reminders 62, school information 64, medical information 66, etc., as seen in Figure 3.

### CENTRAL CONTROL MODULE

The cornerstone of family information management system 10 is central control module 12, which creates an open system accessible via networks to distribute valuable information to family members. Central control module 12 stores family data file 44 defining each family's profile, obtains relevant information relating to family data file 44 from the variety of information sources 30, processes the relevant family information obtained from information sources 30 with information in family data file 44 to create value-added family information, and ensures that family members are continuously updated and reminded with relevant, timely and synchronized valued-added family information through user interface system 14.

Additionally, central control module 12 is preferably designed to learn a family's habits and behaviors, as indicated by what is referred to herein as family activity data. In this way, central control module 12 is able to intelligently employ methods and create services to help improve and enhance the experience of utilizing family information management system 10. As is discussed herein, relevant family information is input into central control module 12 via a variety of input techniques.

It will be appreciated that family information management system 10 integrates the many aspects of daily life into a convenient and easy-to-use system. The vast amount of information obtained (retrieved/accessed/received), categorized, processed and stored by central control module 12 also permits family information management system 10 to serve a wide variety of purposes. In this regard, Figure 4 depicts family information management system 10 as being preferably able to perform a messaging function 68, a reminder function 70, and an appointment

retrieval and input function 72. It will also be seen that family information management system 10 preferably facilitates the ready development of grocery and errand lists 74, meal planning and balancing 76, and school monitoring 78. Family information management system 10 is further capable of automatically purchasing items 80 based upon the family profile created and maintained in central control module 12.

In accordance with the preferred embodiment of the present invention, central control module 12 is a centralized database accessible from a variety of communication networks including the Internet, land-laid phone lines, paging, radio, scanners and cellular systems. The communication systems listed above are considered to be exemplary, and it is contemplated that a wide variety of current and future communication systems may be employed in accordance with the spirit of the present invention.

It is understood that many individuals distrust the perceived limited security provided by software offered through the Internet, and central control module 12 may therefore take various other forms without departing from the spirit of the present invention. For example, central control module 12 may be installed on a secure system only accessible to the members of the family which it serves. While such a system may be prohibitively expensive at the present time, rapid changes in technology might make such a home set-up possible in the not so distant future.

A secure home-installed central control module 12 would function in much the same manner as the Internet-based central control module 12 described in accordance with the preferred embodiment of the present invention. In the future of the networked home, it would be possible to store secure information on a system within the home and send necessary information to the

user interface devices.

With reference to Figure 2, it will be seen that central control module 12 preferably includes a CPU 82 which performs the processing functions of central control module 12. A read only memory (ROM) 84 and a random access memory (RAM) 86 are also provided, ROM 84  
5 being used to store at least some of the program instructions executed by the CPU 82 (such as portions of the operating system or BIOS) and RAM 86 being used for temporary storage of data.

A clock circuit 88 provides a clock signal which is required by CPU 82. It will be understood that use of a CPU 82 in conjunction with ROM 84, RAM 86 and a clock circuit 88 is well known to those skilled in the art of CPU-based electronic circuit design.

10 Central control module 12 also includes a communication port 90 permitting it to communicate with information sources 30 and user interface system 14 in a manner which will be discussed in greater detail. Since central control module 12 is required to communicate with a variety of external devices to receive information in various forms, communication port 90 shall be designed to handle all incoming and outgoing data streams using a variety of technologies  
15 currently available (for example, via modem, hardwired connections, radio communications, optical communications etc.). While various communication port devices are listed above for use in accordance with the preferred embodiment of the present invention, it should be understood that other methods of communicating with external devices may be used instead of those listed above.

20 CPU 82 also stores information in, and reads information from, a data storage device 92 which forms part of central control module 12. It will be understood that data storage device 92

is principally utilized to store family data files 44. Central control module 12 also preferably includes a voice recognition system 94, the operation and function of which is best described below.

In addition to transmitting and receiving information, it will be recalled that central control module 12 is programmed to process relevant family information from one or more information sources 30 with the information in family data file 44 to create value-added family information for use by family members. The value-added family information may then be used by family members and/or stored for later use in family data file 44. In accordance with its learning ability, central control module 12 preferably employs pattern recognition techniques to identify such things as purchasing habits, which are then used to build shopping lists and define recurring events in the family.

Generally, family information management system 10 is able to use collaborative filtering well known to those skilled in the art to combine the information in family data file 44 and relevant family information from other information sources 30 for recommending similar interests, meal suggestions, etc. to add value to the family member(s) using family information management system 10. This collaborative filtering technique allows the consumer to benefit from the knowledge central control module 12 learns from repetitively processing information gathered from their own family activity data, as well as other families using family information management system 10. U.S. Patent Nos. 5,884,282, to Robinson, entitled "Automated Collaborative Filter System," and 5,704,017, to Heckerman et al., entitled "Collaborative Filtering Utilizing A Belief Network," are exemplary of collaborative filtering techniques and are

hereby incorporated by reference.

In addition, central control module 12 will optionally use data mining techniques to analyze the family's activities/messages/habits to distribute information. For example, if the family on occasion requested vegetarian meals, central control module 12 is able to access information sources 30 to locate and suggest vegetarian restaurants in the local area. U.S. Patent Nos. 5,875,285, to Chang, entitled "Object-oriented Data Mining and Decision Making System," 5,842,200, to Agrawal et al., entitled "System and Method for Parallel Mining of Association Rules in Databases," and 5,819,266, to Agrawal et al., entitled "System and Method for Mining Sequential Patterns in a Large Database," disclose exemplary data mining techniques and are hereby incorporated by reference.

As will be discussed below in greater detail, central control module 12 is able to send messages and reminders to family members. When accomplished by means of collaborative filtering with central control module 12, family information management system 10 delivers messages, reminders, etc., based upon certain criteria (e.g., importance, recipient, information contained, etc.). For example, depending on the family member's location and schedule, central control module 12 will know whether to interrupt, remind them, or inform them of changes in their family data file at a later time.

It will be appreciated that a key aspect of central control module 12 is its ability to aggregate information in family data file 44 contained as a family profile and information sources 30, process the information in family data file 44 with information sources 30 to create value-added family information, and output or enable access to the same in a useable format. The

ability of family information management system 10 to combine a personal schedule with a “best approach” to running daily errands, thereby improving the efficiency of the family member, is a good example of how manipulation of family data file 44 coupled with external/internal information sources 30 improves the consumer’s experience with central control module 12. As  
5 will be discussed in greater detail below, information sources 30 used in accordance with the present invention may be proprietary databases owned and/or maintained by family information management system 10 (that is, internal information sources), or they may be separately owned and/or maintained databases working in conjunction with family information management system 10 to provide information (that is, external information sources).

10 For example, when a message comes into family information management system 10, it uses a family unique identification to store the information at the appropriate location within family data file 44 (discussed below in greater detail), while accessing other components of family information management system 10 to determine the possible relevance of the message to other information stored by central control module 12. If, for example, a message containing a  
15 weather update as to severe thunderstorms enters family information management system 10, central control module 12 would access schedule 48 for the family stored in family data file 44. Such access might reveal that the father and son have a golf outing planned two hours later. Central control module 12 is then able to inform the father and son as to the weather without notifying the other nonparticipating family members.

20 By developing central control module 12 as a highly accessible web-based service provider, use of central control module 12 is able to generate vast quantities of consumer



understanding information. Such information regarding family activities may be used to improve the services and products provided to users of family information management system 10, and may even be applied to those consumers not associated with family information management system 10.

5           The collection of relevant consumer understanding data may be further enhanced by collecting voluntary survey information directed to various products. The survey information is collected by central control module 12 in much the same manner other information is input to central control module 12 (discussed below in greater detail).

10           FAMILY DATA FILE

          In accordance with the preferred embodiment of the present invention, and with reference to Figures 2 and 3, central control module 12 includes a database 92 of family data file 44 assigned to specific registered families. Each family data file 44 is composed of a family profile including, for example, personal information regarding each family member 46, schedule  
15 information 48, telephone lists 50, financial information 52, lists (grocery 54, errands 56, daily to-do 58), planned meals 60, family reminders 62, school information 64, medical information 66, etc. The family profile is preferably first created when a family registers with family information management system 10. The family profile is then continuously updated as the family members utilize family information management system 10 as discussed above.

20           Family data file 44 information is preferably integrated into one holistic family information management application that can be accessed through any network (cellular, phone,

5    paging, and Internet) and through a variety of interface devices (as seen by items 16, 18, 20, 22, 24, 26, 27, and 28 in Figure 1). As will be discussed in greater detail below, some of the information contained in each family data file 44 is developed from a variety of sources on a continuing and regular basis, while some of the information is established during the initial set-up procedure for each family registering with the family management system 10.

10    Each specific family data file 44 is preferably protected to provide access only to those members of the registered family. With this in mind, the present invention employs standard security through a variety of well known technologies. Examples of security methods might include voice printing, fingerprint recognition, retinal scans, passwords, or any other method of identification for family members in the future.

#### PERSONAL INFORMATION INPUT

15    Central control module 12 is designed to permit the input and retrieval of information existing in various formats, with such information being assigned to various sub-files 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, and 66 in family data file 44 for later use by family information management system 10 (see Figure 3). The relevant data may be input, for example, as voice commands, written commands, standard keyboard data commands, and touch screen entries. As such, a family member accessing central control module 12 need not use a series of complicated input protocols to update family information management system 10 as to an appointment. The family member could merely call central control module 12, clearly provide relevant information regarding the activity of interest, and terminate the call after approving that the message should

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be added to family data file 44.

For example, it has been found that many mothers remember many things while riding in their cars. With this in mind, a mother who remembers, while driving to pick up her children at school, that she need paper towels and peanut butter from the grocery store could simply retrieve her interface device (for example, cellular communication device 24) from her purse, contact central control module 12, and say, "Please add paper towels and peanut butter to the grocery list." The information would then be formatted and added to grocery list 54 stored in family data file 44 for later use.

With this in mind, central control module 12 is preferably provided with voice recognition software 94 adapted to convert voice commands into a computer usable format. Those skilled in the art appreciate the various systems for voice recognition which are currently available, and a variety of voice recognition software may be used without departing from the spirit of the present invention. It will be recognized, however, that in this scenario the device of user interface system 14 is located remotely from central control module 12.

In the alternative, the use of voice recognition techniques may be replaced by a system wherein voice commands and data are recorded and manually translated into text. This is currently being done by paging and cellular companies in the United States. It might also be possible, in accordance with the spirit of the present invention, for consumers to leave audio or video messages and reminders for other members of the family.

### INFORMATION SOURCES

In addition to building a family data file 44 based upon information directly input by various family members, family information management system 10 is preferably able to automatically obtain information from a variety of information sources 30 to enhance the functionality thereof. Briefly, family information management system 10 is able to gather information regarding meal planning 32, shopping 34, school events and activities 36, local information of interest 38, and financial data 40 based upon the family profile stored within family data file 44 of central control module 12.

For example, and with reference to Figure 6, where a mother has recorded her birthday as January 10 in schedule sub-file 48, central control module 12 (through CPU 82) will know to take that information, obtain relevant information from the variety of information sources 30 associated with family information management system 10, process the birthday with the relevant information from information sources 30 to create value-added family information, and pass the value-added family information on to her or other family members through a user interface system 14. For example, family information management system 10 might retrieve horoscope information or provide a listing of stores at which the other family members might like to look for a birthday present.

Referring to Figure 7, where a father has recorded the family's address in personal information sub-file 46, central control module 12 (through CPU 82) will know to take that information, obtain relevant information from the variety of information sources 30 associated with family information management system 10, process the residence information with the

relevant information from information sources 30 to create value-added family information, and pass the value-added family information to the father or other family members through a user interface system 14. For example, family information management system 10 might obtain construction information or weather information in the local area surrounding the family's house.

5 Further, and with reference to Figure 8, where a father has also recorded his work address in personal information sub-file 46, central control module 12 (through CPU 82) will know to combine the work address with the home address (also in personal information sub-file 46), obtain relevant information from the variety of information sources 30 associated with family information management system 10, process the residence and work information with the  
10 relevant information from information sources 30 to create value-added family information (for example, commuter information based upon the routes the father might take to get to work) which might then be used with information sources 30 to determine any traffic problems along the possible commuter routes, and pass the value-added family information on to the father or other family members through a user interface system 14.

15 This information may be accessed in a variety of manners known to those skilled in the art. For example, where external information sources 30 maintain web pages on the World Wide Web, central control module 12 may simply access specific web pages on a periodic basis to retrieve or access relevant information in a controlled manner. The retrieved/accessed information is then preferably classified to suit the needs of family information management  
20 system 10 and processed with the information in family data file 44 for which it was obtained.

It is contemplated that obtaining relevant family information in this manner would be

most appropriately employed to gather information of local concern (for example, weather, school closings, local election, local board meetings, etc.) where a local government web page may be readily available. This type of system is also contemplated for use in providing certain school information (for example, homework assignments, grades, teacher meetings, holidays etc.), although it is considered that such information may be better obtained in a direct database access manner as discussed below. Web page retrieval of information may also be used to gather information concerning meal planning, shopping and other activities, where appropriate information is available on the World Wide Web.

Information from external information sources 30 may also be retrieved by directly accessing a private database maintained exclusively for the purpose of supplying information to subscribers or otherwise associated individuals. As with accessing a freely accessible web page, central control module 12 of family information management system 10 contacts the private database on a periodic basis to retrieve relevant family information in a controlled manner. The relevant family information is then classified to suit the needs of family information management system 10 and incorporated within family data file 44 for which it was obtained.

As briefly discussed above, it is contemplated that direct database access may be appropriate for retrieving school information which would not commonly be available on a traditional web page. In addition, other information relevant to the daily management of a family, which is not available over the World Wide Web but may be available in private databases (for example, medical information), may be accessed through a direct database access. However, as those skilled in art are readily aware, the line between private databases and those

accessible over the World Wide Web is quickly blurring as security concerns are better addressed. With this in mind, those skilled in the art will understand the intent and spirit of the present invention is not compromised if World Wide Web access is used to the exclusion of direct database access or vice versa.

5 In addition to obtaining information from external information sources 30 not associated with family information management system 10, information may also be obtained from information sources 30 or a database, integrally associated with family information management system 10 (i.e., internal information sources 30). The database is created for the specific purpose of providing a source of information relevant to users of family information management system  
10 10. The database would, therefore, be accessed by central control module 12 of family information management system 10 on a periodic basis for retrieval/access of information which may be relevant to specific users based upon their inputted family profile. The information obtained would then be processed with a specific sub-file in family data file 44 and prepared for use by the members of the family.

15 In accordance with the preferred embodiment of the present invention, it is contemplated that such internal information sources 30 would be best suited for providing meal planning information, shopping information, and general holiday information. With regard to meal planning and shopping information, the integrally associated database is developed to contain a variety of relevant information which is applicable to families of varying profiles. For example, a  
20 vegetarian family would be provided with daily menu suggestions based upon their eating habits, while a family which is especially fond of beef would be provided with daily menu suggestions

based upon their specific eating habits.

While specific examples are contemplated as being suited for internal information sources 30, any of the information sources 30 may be integrally associated with central control module 12 without departing from the spirit of the present invention. In addition, a variety of possible information sources 30 are disclosed in accordance with the preferred embodiment of the present invention. Information sources 30 used in practice may be varied to suit the needs of specific family members without departing from the spirit of the present invention.

One-way transmissions 96 (e.g., facsimile, e-mail, scanning, and other data transmission methods) may also be used in accordance with the present invention to facilitate the inclusion of external information within family data file 44 of a specific family using family information management system 10 (see Figure 1). In practice, one-way transmissions 96 are received by central control module 12, evaluated to determine the specific family or family member to which the transmission relates, and analyzed to identify the relevant information contained in the transmission. The relevant information is then incorporated within the specific family data sub-file for use by the family members. As with the voice recognition system 94 discussed previously, the addition of the information provided by one-way transmission 96 may be automatically incorporated within central control module 12 or manually incorporated using human assistance.

## USER INTERFACE SYSTEM

As briefly discussed above, family information management system 10 employs a user



interface system 14 to update central control module 12 with relevant family information and to inform family members as to various relevant activities. User interface system 14 may take various forms and is designed with the flexibility to suit the specific needs of their daily lives. In accordance with the preferred embodiment of the present invention, user interface system 14 may employ Internet access via a two-way connection from a home PC (including hand held and laptop computers) 16, television 18 or in-home screen 20, two-way radio 22 or cellular communications 24 over a handheld communication device, one-way paging 26, a scanner 27 or simple telephonic voice communications 28 over a land-laid line linkage. More specifically, it is contemplated that in-home screens 20 can be placed in laundry rooms, kitchens, bathrooms, etc., to help moms with information and tips on how to do the in-home daily chores and responsibilities more quickly and easily by using the extensive information available through the present system's numerous databases.

With the exception of one-way paging 26 and scanner 27, each of the user interface devices disclosed above allows a family member to access central control module 12 for inputting new activities and receiving relevant family information regarding previously scheduled activities. User interface devices 14 also provide family members with the ability to receive reminders from central control module 12 regarding the status of important events, as well as plan real-time changes input by another family member.

## FUNCTIONALITY

As discussed above, family information management system 10 is designed to integrate

the many aspects of daily life into a convenient and easy to use system. The vast amount of information obtained, categorized, processed and stored by central control module 12 permits the present system 10 to serve a wide variety of purposes.

Specifically, family information management system 10 allows for the messaging 68 of family members in a quick and efficient manner. In accordance with the invention, family members will send messages to central control module 12 of family information management system 10 by using user interface system 14. The input messages are then forwarded to specific family members by central control module 12 utilizing appropriate transmission methods in accordance with user interface devices 16, 18, 20, 22, 24, 26, and 28 being employed by specific family members. In this regard, it will be seen that Figures 10-14 depict screen displays 120, 130, 140, 150 and 160, respectively, relating to certain exemplary applications utilized with family information management system 10.

The input of messages may further be combined with other information available to central control module 12 in family data file 44 to further improve the transmission of messages.

For example, and as explained above in the case where a weather message enters family information management system 10, central control module 12 is able to access schedule 48 for the family stored in family data file 44. It will be seen from screen display 120 of the calendar application that the schedule information is shown therein. Such access might reveal that the father and son have a golf outing planned two hours later and central control module 12 is then able to inform the father and son as to the weather without notifying the other nonparticipating family members. This illustrates an information source 30 initiating and sending relevant family

information to central control module 12 upon a predetermined event, which is then processed with information contained in a sub-file of family data file 44 to create family information having added value. Accordingly, the value-added family information is passed on to the appropriate family members via a user interface system 14.

5 Family information management system 10 also preferably provides a reminder function 70 whereby reminders are sent to specific family members as important dates and times approach. The reminder functionality preferably includes general family reminders, such as changing furnace filters, oil changes, and other consumer specified family reminders. It will be appreciated from screen display 130 of Figure 11 that the to do list application could be utilized  
10 for this function. Family information management system 10 also includes a built-in intelligence which optimizes family management by learning family habits and automating tasks. In this way, central control module 12 will not simply send reminders exactly as schedule, but will learn from other information available to family information management system 10 when it is an appropriate time to send reminders. For example, where family data file 44 indicates that dad is  
15 out of town on a business trip, central control module 12 will delay sending dad a reminder to mow the lawn until he returns from his trip.

As briefly discussed above, central control module 12 also preferably permits family members to input and retrieve appointments (with associated times) 72. User interface devices 16, 18, 20, 22, 24, 26, 27, and 28 are designed to access multiple views of the calendar  
20 application, including: today, tomorrow, weekly, monthly, or any consumer customized view of the calendar data (such as in Figure 10). The calendaring function is capable of managing group,

as well as individual schedules. In accordance with the preferred embodiment of the present invention, standard group protocols are used and a variety of techniques may be employed without departing from the spirit of the present invention. U.S. Patent No. 5,519,606 to Frid-Nielsen et al. is exemplary of calendaring systems and is hereby incorporated by reference.

5 Family information management system 10 also preferably assists in building grocery and errand lists 74. Besides the to do list application discussed hereinabove, screen display 150 for the grocery list application is shown in Figure 13. More specifically, a separate Pick List 151 is provided to keep a comprehensive list of all items which have been previously purchased or consumed while a grocery list 152 is provided so that items which are required may be set out  
10 therein. In order to assist in this endeavor, separate control buttons 153, 154 and 155 are provided which function to add an item to Pick List 151 and/or Grocery List 152, delete items which have been checked in Pick List 151 and/or Grocery List 152, and move items from Pick List 151 to Grocery List 152, respectively. A box 156 is provided to type in the name of a product and works in association with control button 153. It will also be appreciated that items  
15 may be added to either Pick List 151 or Grocery List 152 by means of a UPC bar code scanner, for example. In this way, a current inventory of items on hand may be maintained (i.e., by scanning the item when stored), as well as those items which need to be purchased (i.e., by scanning the item once it has been used).

It is contemplated that such lists may be transformed into online ordering of items (as  
20 indicated by functionality box 80 in Figure 4), although the list-making capabilities may be used independently of online shopping. Shopping functionality could also include categorization of

items, organization of items by store layout, notification of items that are on sale, notification of new products, and suggestions for alternative products and uses.

It is also contemplated that family information management system 10 could track the frequency of products purchases and automatically generate shopping lists based upon elapsed  
5 time. Similarly, central control module 12 might note certain patterns in ordering habits and make suggestions for various products well suited to the interests and/or needs of the family member. Central control module 12 might also access various information sources 30 based upon the family ordering habits to retrieve and supply relevant coupons for use by the family.

Another area of interest in the present system is indicated by screen display 160 for the  
10 my home application. As seen therein, family information management system 10 is able to serve a monitoring function in association with cameras or other similar video and/or audio equipment. For example, a baby's room may be monitored to confirm that he/she is still sleeping at area 161. Another anticipated use is the monitoring of television watching by children so as to prevent them from see programs which are not appropriate at area 162. Of course, the television  
15 may be programmed with central control module 12 so that programs having certain ratings are not able to be seen unless a password or other security key is provided. These items may even be constantly seen within a window area allocated on a main screen display.

Besides the television, other appliances (e.g., washer, dryer, microwave, oven, dishwasher and refrigerator), as well as various systems like the heating and air conditioning, sprinkler,  
20 lighting and security, within the home may be integrated with central control module 12 so that their status may be checked and altered where desired (see icons 163 and 164). In this way, users

of family information management system 10 are able to perform certain desired functions with respect to such items from a remote location.

As discussed above, family information management system 10 also preferably provides a meal planning function 76. One desirable feature within the my home application is the ability to provide details regarding meals under Today's Meal icon 165. Also, a link to various recipes is provided by a Recipe icon 166 (such as to the crisco.com website), where family information management system 10 allows consumers to access recipes based on family preferences and other constraints. The recipes, or daily menu suggestions, are selected by a family member, assigned a specific day on which the meal is to be prepared, and stored in meal sub-file 60 of family data file

44.

Further, the daily menu suggestions offered by internal information source 30 are preferably linked to shopping lists created and forwarded to the family members based upon the meal suggestions. Family information management system 10 might first propose a series of menus for a predetermined period of time, such as a week. The family member responsible for preparing meals would then modify the menu to suit specific needs and submit the final menu to central control module 12 for processing. Central control module 12 is then able to access internal information sources 30 (for example, meal information source 32) to generate a grocery list based upon the final menu. The grocery list is then incorporated within the specific family data file 54 for access and use by family members. Family information management system 10 is also able to help track the nutritional value of meals and generates grocery lists based upon the family menu.

As discussed above, family information management system 10 preferably allows for continuous contact with a child's school 78. For example, family information management system 10 assists in communicating homework, school activities, grades, and teacher comments, as well as assists families in tracking children's school performance. In this way, family information management system 10 allows teachers to send updates and assignments out to a group of students or an individual student. This information may be updated using the system input mechanisms discussed above. Accordingly, family information management system 10 may also be used to provide sample college entrance exams, information on education, study tips, and other helpful educational materials.

In essence, family information management system 10 provides a three-way communication link between the school, the children and the parents. A school database 36, such as a web page, is able to provide a platform for communicating such things as assignments, test scores, classroom discussion topics, school calendars, as well as additional resources for the student. This preferably will entail a separate screen display for such items, such as within the local information application. It will help the ongoing tracking of students progress by giving frequent updates and be easy to maintain.

Each of the functional components are linked via central control module 12 to add value to the information being processed by family information management system 10. In this way, central control module 12 continuously looks to information sources 30 and information stored in the family data file 44 to identify links which might be combined to further enhance the lifestyle of the family and each family member.

In addition to meal planning and school interaction, maintenance of a family's schedule is often difficult when various family members are consistently adding and changing previously scheduled activities. With this in mind, family information management system 10 maintains the schedules, appointments, and events for each family member. It is easy for all family members to input schedule information by using any one of the devices depicted for user interface system 14 discussed herein. For example, on Friday, mom is supposed to pick up Johnny from soccer at 6:00 and make sure Jenny gets to her softball game by 6:15. Due to the rainy weather, soccer practice and the softball game have been canceled, and mom needs to pick up Johnny at school. Family information management system 10 will inform dad that he must pick up Johnny due to mom's doctor's appointment. By using simple artificial intelligence or time allocation programs, family information management system 10 will be able to straighten the changing schedule of the family. When Katie comes home from babysitting, she is expecting dinner at 7:00 because of softball and soccer. When she comes home, however, screen 20 on the refrigerator notifies her that everyone will be home earlier because soccer and softball were canceled. She then knows dinner will be earlier and is able join her family for dinner.

#### ADDED FUNCTIONALITY

In addition to providing families with a system for managing their daily lives, family information management system 10 may be further enhanced to include information sources specifically designed to help families with commonly occurring problems and minimize the stress of everyday life. In this way, family information management system 10 will intelligently match



a consumer with an expert to solve specific family problems. The family problems may be identified via information contained in family data file 44 or a directly input question proposed by a family member.

Where the problem is identified via information contained in family data file 44, central control module 12 would first identify a predetermined event (for example, a child has a doctor's appointment for the flu). Central control module 12 would then look to various information sources 30, obtain relevant information, format the information, and provide the same to the family member in a useable format which the family could use before going to the doctor visit. For example, family information management system 10 might remind the family to provide lots of fluids, rest, etc., while waiting to visit the doctor.

In this regard, family information management system 10 may provide mothers with advice on how to take care of their newborn child, how to treat illness, what to do if their child isn't eating, how to treat diaper rash, how to deal with food allergies, etc.

Similarly, family information management system 10 could be enhanced to aid in the maintenance of general health care. With this in mind, family information management system 10 could readily be modified to include integrated sensors used in health care maintenance (for example, blood pressure sensors, body temperature sensors, glucose level detectors, etc.). The monitored information could then be used to track and provide suggestions to improve the health of an individual or a family member. It might also be used for things like regulating diabetes or blood pressure and reminding family members to take their medication. In addition, family information management system 10 could be designed to provide information on healthy

lifestyles.

### CONSUMER INFORMATION RESOURCE

As briefly discussed above, use of central control module 12 is able to generate vast quantities of consumer understanding information. Such information regarding family activities is able to be used to improve the services and products provided to those consumers taking advantage of family information management system 10, as well as those consumers not associated therewith.

With this in mind, and with reference to Figure 9, the present invention provides an effective computer assisted method for developing consumer understanding information relating to family lifestyles. The method is achieved by first providing a freely accessible family information management system 10 including a central control module 12 where at least one family profile is stored in a central control module 12 (see box 170). During the normal course of operation by a family, family information management system 10 obtains information from a plurality of information sources 30 relevant to the family based upon specific criteria established in the family profile, formats the information obtained, and provides the information to the family members in a useable format. Family information management system 10 also typically receives information from and communication between family members, formats the received information/communication, and forwards the received information/communication to designated family members in a timely and synchronized manner. The information accumulated in this manner is collectively known herein as "family activity data," which is obtained along with the

family profile stored in central control module 12 by accessing family information management system 10 (box 172).

The family activity data and family profile may be monitored and stored by central control module 12 (box 174). For example, when the family accesses central control module 12 to make a grocery list or to schedule a trip to the grocery store, central control module 12 stores this information for later use by the system provider. Similarly, when purchases are made and when vacations are planned, central control module 12 stores the information for later use by the system provider.

Finally, the family activity data is analyzed to improve the services and products provided to those consumers taking advantage of family information management system 10, as well as those consumers not associated therewith (box 176). For example, where the family activity data indicates that most grocery shopping is done on Wednesday, the service provider will know to stock stores on Wednesdays. Similarly, if the family activity data indicates that more families are eating healthy food, the service provider will know to work harder on developing healthy foods.

The collection of relevant consumer understanding data may further be enhanced by collecting voluntary survey information directed to various products (box 175). This survey information is preferably collected from central control module 12 in much the same manner as other information is input therein.

Through the analysis of the family activity data in central control module 12, family information management system 10 is able to suggest or recommend products and services, as well as communication with other families having similar family activity data and/or family

profiles (box 178).

While the preferred embodiments have been shown and described, it will be understood that there is no intent to limit the invention by such disclosure, but rather, is intended to cover all modifications and alternate constructions falling within the spirit and scope of the invention as

5 defined in the appended claims.

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